

Claims

1. Mould for the continuous casting of round billet and bloom formats, comprising a copper tube (3), which forms a mould cavity (4), and an arrangement for cooling the copper tube by water-circulation cooling, characterised in that the copper tube (3) is provided over the entire circumference and substantially over the entire length with a supporting shell (12) which supports the copper tube (3) at the tube outer lateral surface (5) at supporting surfaces (8), and in that cooling ducts (6) for guiding the cooling water are distributed over the entire circumference and arranged substantially over the entire mould length in the copper tube (3) or in the supporting shell (12).
2. Mould for the continuous casting of polygonal billet and bloom formats, preferably having rectangular cross-sections, comprising a copper tube (23), which forms a mould cavity (24), and an arrangement for cooling the copper tube (23) by water-circulation cooling, characterised in that the copper tube (23) is provided at the tube outer lateral surface (25), substantially over the entire circumference and substantially over the entire length, with supporting plates (32 - 32'') which are connected to the copper tube (23) and which support the walls of the copper tube (23) at supporting surfaces (28, 28'), and in that cooling ducts (26) for guiding the cooling water are distributed over the entire circumference and arranged substantially over the entire mould length in the copper tube (23) or in the supporting plates (72, 72').

3. Mould according to Claim 1 or 2, characterised in that the cooling ducts (6, 26) reduce the wall thickness of the copper tube (3, 23) in the region of the cooling ducts (6, 26) by 20% to 70%, preferably by 30% to 50%.
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4. Mould according to Claim 1 or 2, characterised in that the cooling ducts (6, 26) take up 65% to 95%, preferably 70% to 80%, of the outer surface of the copper tube (3, 23).
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5. Mould according to Claim 1 or 2, characterised in that the copper tube (3, 23) has a residual wall thickness of 4 mm to 10 mm in the region of the cooling ducts (6, 26).
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6. Mould according to Claim 2, characterised in that in the case of rectangular billet and bloom moulds four supporting plates (32 - 32'') are releasably attached to the copper tube (23), each supporting plate (32 - 32'') butting at its end face against one neighbouring plate and overlapping the other neighbouring plate.
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7. Mould according to Claim 2, characterised in that neighbouring supporting plates (32, 51, 52) are screwed together in the corner regions of the copper tube (23) and form a supporting box arranged around the copper tube (23).
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8. Mould according to Claim 2, characterised in that elastic seals (54) which allow expansions of the copper tube walls are arranged in overlap gaps between the supporting plates (51, 52).
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9. Mould according to Claim 1 or 2, characterised in that the cooling ducts (6, 26) are delimited by supporting ribs (8, 28) and/or connecting ribs (9, 29) which support the copper tube (3, 23) on the supporting plates (32) or on the supporting shell (12) and/or connect it thereto.
10. Mould according to Claim 2, characterised in that, for each side of the strand, narrow supporting surfaces (28') are arranged along the corner regions and connecting ribs (9, 29, 59) are arranged in the middle region of the mould sides, the connecting ribs (9, 29, 59) being provided with securing devices to prevent movements transversely to the strand axis.
11. Mould according to Claim 1 or 2, characterised in that the securing device comprises a dovetail profile, a T-profile for sliding blocks or a clamping device etc.
12. Mould according to Claim 2, characterised in that the copper tube (23) has a curved mould cavity (24) and the two supporting plates (32, 32") which support the curved side walls of the copper tube (23) have plane boundary surfaces at their sides (36, 36") opposite the curved supporting surfaces.
13. Mould according to Claim 1 or 2, characterised in that cooling ducts (6, 26, 55) milled into the copper tube (3, 23) are closed off with a copper layer (58) produced by electrodeposition.

14. Mould according to Claim 1 or 2, characterised in that the supporting plates (32 - 32''') or the supporting shell (12) consist or consists of a metallic material, preferably austenitic steel, or non-metallic material which can be easily penetrated by magnetic fields.
15. Mould according to Claim 1 or 2, characterised in that electromagnetic coils (14) are arranged outside the supporting plates (32 - 32''') or the supporting shell (12), or moving permanent magnets are fitted into the supporting plates (32 - 32''') or the supporting shell (12).
16. Mould according to Claim 1 or 2, characterised in that a protective layer (57) to prevent electrolytic corrosion is arranged between the supporting plates (32 - 32''', 51, 52) or the supporting shell (12) and the copper tube (3, 23, 56).
17. Mould according to Claim 1 or 2, characterised in that the supporting plates (65) or the supporting shell (12) are or is provided with cooling-water supply lines (64) and discharge lines (68) which are arranged at the upper end of the mould and can be connected to the cooling-water network by means of a coupling plate (67).